We claim:

1. A backplane board for use in a computer networking router comprising:

a. a backplane board substrate having a plurality of electrical circuitry pathways;

b. a plurality of electronic circuit board expansion slots located on said substrate and in data communication with said electrical pathways, each slot adapted to receive a network interface card and retain said network interface card spaced apart from but in a generally parallel plane with said backplane board substrate; and

c. at least one electronic circuit board expansion slot adapted to receive a single board computer;

wherein said backplane board is a passive backplane board.

2. The backplane board of claim 1 wherein said backplane board further comprises an E^2PROM memory chip.

3. The backplane board of claim 1 wherein said E^2PROM memory chip is in data communication with a single board computer, said E^2PROM memory chip further comprising a means for providing an identifying item to said single board computer, whereupon said single board computer upon receiving said identifying item permits a router employing said backplane board and said single board computer to operate.

4. The backplane board of claim 3 wherein said identifying item is selected from the group consisting of a hardware serial number associated with said backplane board, a data key, and combinations thereof.

5. The backplane board of claim 1 wherein said backplane board further comprises a plurality of light emitting diodes.

6. The backplane board of claim 5 wherein said light emitting diodes are adapted to provide functions selected from the group consisting of providing a visual indication of

the real time network utilization rate of said backplane board, providing a visual indication of the operation of the backplane board for the diagnosis of the operational state of said backplane board, and combinations thereof.

7. The backplane board of claim 6 wherein during operation in a high availability mode, at least a portion of said light emitting diodes display said network utilization rate, and a portion of said light emitting diodes displays high availability heartbeats in blinks per unit of time.

8. The backplane board of claim 2 whrein said backplane board further comprises a plurality of light emitting diodes.

9. The backplane board of claim 8 wherein said light emitting diodes are adapted to provide functions selected from the group consisting of providing a visual indication of the real time network utilization rate of said backplane board, providing a visual indication of the operation of the backplane board for the diagnosis of the operational state of said backplane board, and combinations thereof.

10. The backplane board of claim 9 wherein during operation in a high availability mode, at least a portion of said light emitting diodes display said network utilization rate, and a portion of said light emitting diodes displays high availability heartbeats in blinks per unit of time.

11. The backplane board of claim 1 wherein said backplane board includes three electronic circuit board expansion slots located on said backplane board substrate and in data communication with said electrical pathways, easch electronic circuit board slot being adapted to receive a network interface card and retain said network interface card spaced apart from but in a generally parallel plane with said backplane board substrate.

12. The backplane board of claim 1 wherein said backplane board is adapted to operate in a router, wherein said router is approximately one rack unit in height.

13. The backplane board of claim 1 wherein said backplane board is adapted to operate in a router, wherein said router is one rack unit in height.

14. The backplane board of claim 1 further comprising a half-wave bridge rectifier.

15. The backplane board of claim 14 wherein said backplane board is adapted to receive electrical power from at least two power supplies and said half-wave bridge rectifier operates to provide fail over protection to permit said backplane board to continue to operate from electrical power supplied by only one of said power supplies should either power supply fail to provide electrical power to said backplane board.

16. A router comprising:

a. a housing;

b. a plurality of data communication ports accessible externally of said housing, said ports residing on and in data communication with a network interface card;

c. a single board computer; and

d. a passive backplane board interposed between said network interface card and said single board computer, said backplane board providing data communication between said network interface card and said single board computer, said backplane board comprising a backplane board substrate having a plurality of electrical circutry pathways, a network interface card-receiving electronic circuit board expansion slot located on said backplane board substrate for receiving said network interface card and in data communication with said electrical pathways, and a means for providing data communication between said backplane board and said single board computer;

wherein said network interface card is retained within said network interface card-receiving electronic circuit board expansion slot in a spaced apart but generally parallel plane with said backplane board substrate and wherein said router housing is approximately one rack unit in height.

17. The router of claim 16 wherein said backplane board comprises a plurality of network interface card-receiving electronic circuit board expansion slots.

18. The router of claim 17 wherein a portion of said plurality of electronic circuit board expansion slots are populated with a network interface card and a portion of the electronic circuit board expansion slots are not populated with a network interface card.

19. The router of claim 17 wherein the backplane board comprises three network interface card-receiving electronic circuit board expansion slots.

20. The router of claim 19 wherein the group of electronic circuit board expansion slots populated with a network interface card are selected from the group consisting of one, two and three of said electronic circuit board expansion slots.

21. The router of claim 20 wherein said data communication ports are selected from the group consisting of 10/100 megabit ports, one gigabyte ports and combinations thereof.

22. The router of claim 21 wherein each of said network interface cards includes four data communications ports, and each of said data communications ports are 10/100 megabit ports.

23. The router of claims 16, 17, 21 or 22 wherein said means for providing data communication between said backplane board and said single board computer is selected from the group consisting of an electronic circuit board expansion slot located on an in data communication with said backplane board, said expansion slot being adapted to receive said single board computer and a PCI Industrial Computer Manufacturing Group PIC MG connector.

24. The router of claim 23, wherein said backplane board further comprises an E^2PROM memory chip.

25. The router of claim 25 wherein said E^2PROM memory chip is in data communication with said single board computer, said E^2PROM memory chip further comprising a means for providing an identifying item to said single board computer, whereupon said single board computer upon receiving said identifying item permits a router employing said backplane board and said single board computer to operate.

26. The router of claim 25 wherein said identifying item is selected from the group consisting of a hardware serial number associated with said backplane board, a data key, and combinations thereof.

27. The router of claim 23, wherein an item selected from the group consisting of said housing, said backplane board and combinations thereof further comprises a plurality of light emitting diodes.

28. The router of claim 27 wherein said light emitting diodes are adapted to provide functions selected from the group consisting of providing a visual indication of the real time network utilization rate of said backplane board, providing a visual indication of the operation of the backplane board for the diagnosis of the operational state of said backplane board, and combinations thereof.

29. The router of claim 28 wherein during operation in a high availability mode, at least a portion of said light emitting diodes display said network utilization rate, and a portion of said light emitting diodes displays high availability heartbeats in blinks per unit of time.

30. The router of claim 23 wherein said data communications ports are horizontally aligned along the same line of axis and and are sequentially numbered such that when a plurality of ports is present, the ports are sequentially identified from one end of the aligned ports to the other wherein port 1 is the first and left-most port, the second left-

most port is port 2 and the remaining ports are sequentially numbered in increasing numerical sequence proceeding to the right-most port.

31. The router of claim 23 further comprising an operating system associated with the single board computer.

32. The router of claim 31 further comprising a means for configuring said operating system.

33. The router of claim 32 wherein said operating system is configured from the group consisting of direct configuration and remote configuration over a computer networking system.

34. The router of claim 33 wherein said means are selected from the group consisting of a computer keyboard and interface, computer monitors and interface, serial data communications ports, parallel data communications ports, computer terminals, and combinations thereof.

35. The router of claim 23 further comprising a pair of redundant power supplies contained within said housing for providing electrical power to said backplane board..

36. The router of claim 35 wherein said backplane board further comprises a half bridge rectifier.

37. The router of claim 36 wherein said backplane board is adapted to receive electrical power from said pair of redundant power supplies and said half-wave bridge rectifier operates to provide fail over protection to permit said backplane board to continue to operate from electrical power supplied by only one of said power supplies should either power supply fail to provide electrical power to said backplane board.

38. The router of claim 23 further comprising a plurality of cooling fans retained within said housing;

39. The router of claim 38 wherein said cooling fans are powered by one or more power takeoffs from said backplane board, at least a portion of said power takeoffs further comprising a polyfuse.

40. The router of claim 23, said router being adapted to operate with a peripheral computer interface bus with 32-bits and 33 megahertz clock speeds.

41. The router of claim 23 further comprising an adaptive firewall protection.

42. The router of claim 41 further comprising denial of service protection.